



Portion Sizes and School-Age Children:

Trends Effects Solutions

Trends in Portion Sizes

More than 60 percent of adults in the U.S. are overweight or obese, and there are twice as many overweight children and three times as many overweight teens as there were two decades ago.^{1,2} Part of the problem is that Americans are eating more and physical activity has not increased to maintain energy balance. Between 1970 and the late 1990s, the daily food supply in America increased by 500 calories.³ Although food supply is an overestimation of what people eat, dietary intake surveys show an average increase of more than 200 calories per day.³ Even small increases in calories can translate into significant weight gain. One contributing factor is an increase in portion sizes.

“Portion size” is defined as the amount of food one chooses to eat.⁴ There are no standards for portion sizes. On the other hand, a “serving size” is a standard amount that gives guidance as to how much to eat or identifies how many calories and nutrients are in a food.⁴ The USDA Food Guide Pyramid provides serving size recommendations to guide people in selecting their daily food intake. For example, one half cup of spaghetti (just the pasta) is one serving from the Grain Group. If you eat two cups of spaghetti for dinner, you are actually eating four servings.



**Serving Size =
½ Cup of Spaghetti**



**Portion Size =
2 Cups of Spaghetti**

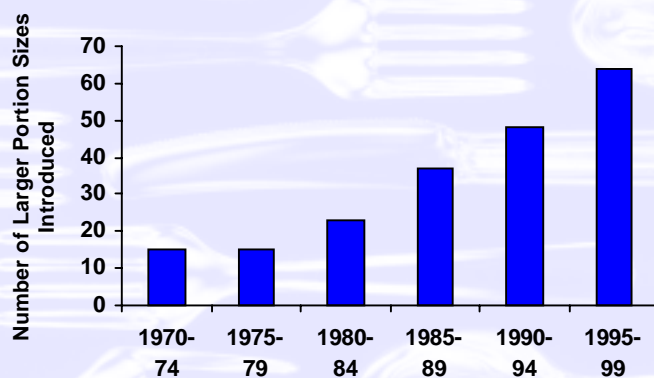
Depending on age, gender and activity level, this could amount to one-third to two-thirds of the daily recommendation for the Grain Group. While there is nothing wrong with eating a “portion size” that is more

than one serving, it is important to know the difference between a portion and a serving. If you eat a portion that is actually several servings, you need to balance that with the other foods eaten in the day. The portion sizes of a majority of foods sold for immediate consumption far exceed the Food Guide Pyramid serving sizes.⁵ Indeed, our perception of what a serving size is has been altered by the increasing availability and marketing of larger food portions.

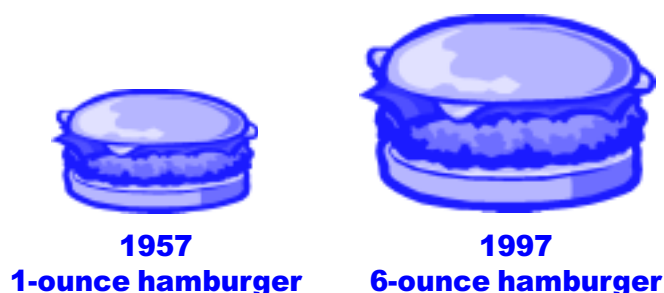
The introduction of larger-size portions in away-from-home and marketplace foods has increased significantly.⁶ Bagels used to weigh between 2-3 ounces. Today, the average bagel weighs 4-7 ounces.⁷ The eight-ounce soft drink has become 20 ounces and the average theater serving of popcorn has gone from three cups to 16 cups.⁸ A typical hamburger in 1957 contained a little more than one ounce of cooked meat, compared to as much as six ounces in 1997.⁸ The trend toward larger portion sizes is most evident in restaurants and fast food outlets but is also significant in homes.⁵ One example is observed in recipes used at home. Newer editions of classic cookbooks such as *The Joy of Cooking* contain recipes identical to earlier versions, but yield fewer and therefore, larger portions than before.⁶

Meal combos or value meals have become increasingly popular. Fast food chains offer more food for only a slight increase in cost. This supersizing of meals

Introduction of New, Larger Portion Sizes of Foods and Beverages Prepared for Immediate Consumption, 1970-1999.⁶



encourages Americans to buy and eat more food under the premise that it is a good value. For only 29¢ - 49¢, a fast food meal is supersized by as much as 400 calories. Super-combo meals, which include a large drink and fries, are often less expensive than the same sandwich with a small drink and fries.⁷ Fast food chains are not the only eating establishments increasing portion sizes. Many restaurant orders are so large that the Food Guide Pyramid daily recommendations for some food groups can be met in a single meal.⁴ Larger portion sizes can easily shift a healthful meal to one of excessive calories, fat, sugar and sodium.



Children are not immune to the increase in portion sizes. Fast food chains are now targeting children ages 7 to 12 with supersized versions of their popular kids meals.^{9, 10} By increasing the regular hamburger to a double hamburger or double cheeseburger, the calorie content of the meal increases by 100-180 calories.^{11, 12}

In the past, many people considered eating out to be a special treat. Indulging in a large meal at a restaurant or fast food outlet was easily balanced with more moderate meals eaten throughout the week. However, several societal shifts – such as an increase of women in the workforce, dual-income households and smaller household sizes – have increased the demand for foods prepared away from home. In addition, away-from-home foods are now more affordable and accessible than ever before. Away-from-home food consumption has increased by two-thirds from 1977 to 1995.¹³ Half of the meals eaten away from home are fast foods.⁸ As children get older, the proportion of meals eaten away from home increases from 18 percent in preschoolers to 30 percent in adolescents.¹³

Health Effects of Larger Portion Sizes

Have you ever walked into a donut shop to get a half dozen donuts and discovered that you could get one whole dozen for the same price? What would you do? Many consumers would opt for the dozen.

Consumers shop for value! Surveys show that consumers will choose to dine at restaurants based on the portion sizes that are served. A recent study shows that increasing the portion size affects food intake in adults in a single meal. There was a significant relationship between the amount of food offered and the amount eaten.¹⁴

Larger portions of high-calorie, high-fat foods are one of several environmental and societal trends contributing to the increase in overweight adults and children. According to the 2001 Surgeon General's *Call to Action to Prevent and Decrease Overweight and Obesity*, there were nearly twice as many overweight children (13 percent) and almost three times as many overweight adolescents (14 percent) as there were in 1980.¹⁵ A 2002 study in the *Journal of the American Medical Association* indicated the prevalence of overweight among children and adolescents has continued to increase. The prevalence of overweight was 15.5 percent among 12- to 19-year-olds, 15.3 percent among 6- to 11-year-olds and 10.4 percent among 2- to 5-year-olds. 2001 North Carolina data from children seen in public health settings show an even greater increase in the prevalence of overweight children.¹⁶

Percent of North Carolina Children Who Are Overweight.¹⁶

| | 1995 | 2001 | Increase |
|------------|-------|-------|----------|
| Ages 2-4 | 9.0% | 12.0% | 33.3% |
| Ages 5-11 | 14.7% | 20.3% | 38.1% |
| Ages 12-18 | 22.7% | 26.3% | 15.9% |

Studies have indicated that overweight children (especially adolescents) are at higher risk of becoming obese adults.¹⁷ The likelihood that childhood overweight will persist into adulthood ranges from approximately 50 to 70 percent, increasing to 80 percent if one parent is overweight.^{18,19} Obesity is no longer a concern for adults only. Signs of chronic disease associated with obesity are showing up in overweight children. These include:

- Atherosclerotic plaques²⁰
- Hypertension^{21,22,23}
- Increased triglycerides^{21,23}
- Increased insulin resistance and Type 2 diabetes^{20,24}

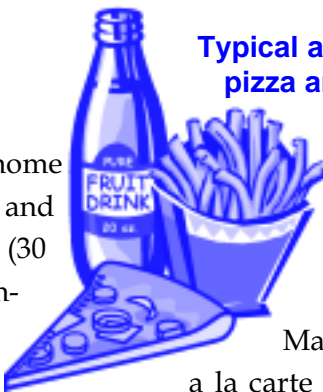
Portion Sizes in Schools

Schools are the main providers of away-from-home meals (36 to 42 percent) for school-aged children and adolescents, followed by fast food restaurants (30 to 32 percent).¹³ Compared with other away-from-home foods, the National School Lunch Program (NSLP) provides better-quality foods that are relatively rich in fiber, calcium and other vitamins and minerals, and lower in added sugars.²⁵ Furthermore, the portion sizes in NSLP meals are generally consistent with the serving sizes recommended in the USDA Food Guide Pyramid. Although there is no maximum number of calories that may be provided, studies show that NSLP meals provide approximately 1/3 of the RDA for calories and School Breakfast Program meals provide about 1/4 of the RDA for calories.²⁵

In addition to the NSLP, there are increasing numbers of food and beverage options at school from which students choose their meals and snacks. A study of California schools found that in 71 percent of school districts surveyed, a la carte items accounted for up to 70 percent of all food sales at the schools.²⁶ Similar data are not available for North Carolina schools. However, while the participation rate for reimbursable meals in N.C. schools has declined 20 percentage points in the past two decades, the percent of students eating meals at school has remained steady due to an increase in a la carte sales. The trend was also observed in the School

Nutrition Dietary Assessment Study-II which showed that as a la carte sales increase, participation in the NSLP decreases.²⁵

Meals served under the NSLP have nutrition standards that must be met, but other foods available at school have no such standards. Many are high in fat, sugar and/or sodium, but provide few key nutrients. Compounding this problem is the fact that many of these foods tend to be made available in large portion sizes similar to those served in restaurants or available in the retail sector.


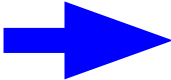






Typical a la carte lunch: fruit drink, cheese pizza and fries = 1,060 calories

One-third of the RDA for a teenage boy is 1,000 calories and for a teenage girl it is 733 calories.

Many students select their total lunch from a la carte items such as large servings of pizza, French fries, nachos and juice drinks.²⁴ Even students who select a NSLP lunch that meets nutrition standards often supplement it with large portions of French fries or other high-calorie foods and beverages.

An Example of the Potential Weight Gain When Eating TWO Servings of Oven Fries Per Week for 36 Weeks in Addition to the School Lunch.

| <u>Serving Size</u> | <u>Potential Weight Gain</u> |
|--|---|
| 1/2 cup oven fries  |  2.3 pounds |
| 1 cup oven fries  |  4.5 pounds |
| 1 1/2 cup oven fries  |  7.0 pounds |

Solutions for Reducing Portion Sizes

Schools have two constraints – customer demand and financial goals – that make it difficult for them to serve only foods that provide optimal nutrition and contribute to healthy weight in their students. Students who are accustomed to large portion sizes at home and in fast food restaurants also want them at school. Increasing numbers of school districts provide no local operating funds for food service programs and many operate vending machines that compete with cafeterias for students' appetites and dollars to fund extra curricular activities.

In order to reverse the supersize trend, parents, students, school officials and industry must recognize the value this will have for students' health and for future healthcare costs. They must work together toward this end. A Healthy People 2010 objective calls for ensuring that all foods available at school contribute to good dietary quality. A Healthy Carolinian objective calls for reducing the percent of children and adolescents who are overweight and obese. These objectives, along with the N.C. Healthy Weight Initiative²⁸ recommendation of establishing standards for all foods in schools, support action in this area. Until this occurs, communities need to engage students, parents, school officials and civic leaders to address portion sizes for all foods on school campuses. This will send a clear message to students that healthy eating is a priority for the school and community. It will also provide an environment that supports healthy choices by students.

Influencing Portion Sizes in Schools

The following recommendations will aid schools in striving to create environments that support healthy food and beverage choices by students. Following all recommendations is desirable, but phased-in implementation may be necessary in some schools.

- Ensure that School Breakfast Program (SBP) and National School Lunch Program (NSLP) meals meet all nutrition standards and provide sufficient choices of nutritious, appealing foods in portion sizes appropriate for different age groups. In middle and high schools, increase the number of NSLP meal options available for students, including such choices as Grab 'n Go Bags, pre-plated salads, salad bars and choices for hot meals – all planned to meet nutrition standards.
 - To the extent that is financially feasible, offer larger-than-required portions of fruits and vegetables without added sauces and seasonings that add calories.
 - Offer entrees that are no larger than the minimum required by USDA.
 - Offer occasional desserts in small portion sizes to help students learn to enjoy the quality, not quantity, of food.
- Limit beverage sales to water (any size), low-fat or nonfat (1% or less fat) flavored and unflavored milk, and 100% fruit or vegetable juices (no larger than 8 ounces for elementary and 12 ounces for middle and high schools).
- Permit no a la carte, snack bar and vending machine sales of individual foods in elementary schools, in order to help students learn to eat well-balanced meals that have been planned to meet nutrition standards.
- In middle and high schools, limit portions to specific sizes (examples for local consideration):
 - Snacks: 1.25 oz.
 - Cookies and cereal bars: 2 oz.
 - Bakery items: 3 oz.
 - Frozen desserts: 3 oz.
 - Yogurt: 8 oz.
 - Fries: 1 cup
 - Pizza: no more than 5 oz.
 - Entrees and side dishes: portion sizes equal to those of similar items served as part of NSLP or SBP
- Require the availability of fruits and vegetables at competitive prices and portion sizes in any venue where competitive foods are sold.

Influencing Portion Sizes in Families and Communities

Portion distortion is now the norm. While this publication focuses on schools, reversing this trend is also a challenge for families and communities.

Families provide children's first learning environment and have the potential to make that environment supportive of healthful eating patterns that include a wide variety of foods and normal portion size. Simple suggestions include:

- Prepare and eat more meals at home. We all tend to eat larger portions when we eat out.
- Help children learn what a serving looks like. For example, measure cereal in the child's bowl and discuss that a bowl of cereal and a serving of cereal can be different.
- Package snack items in individual servings.
- Provide healthy food in appropriate portion sizes and let children decide how much they will eat and help them learn to stop when full.
- When eating out, avoid all-you-can-eat buffets, supersized meals and other deals that promote overeating.
- Share restaurant meals or take part of the meal home.

Communities reflect the values and priorities of its residents. A few activities related to portion size that will reflect a priority for healthy weight in children and youth include:

- Advocate for appropriate portion sizes in vending machines in parks, recreation facilities and other community buildings.
- Advocate for a reduction of aggressive marketing of large portions of high calorie foods and beverages targeted to children.
- Advocate for adequate funding for education so that schools do not rely on funds through the sale of high-calorie individual food items that contribute to overeating.

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Developed by the North Carolina School Action Committee (SNAC). SNAC consists of representatives from three state agencies that participate in school nutrition services including the Department of Public Instruction, the Division of Public Health within the Department of Health and Human Services and the NC Cooperative Extension Service.

These institutions are equal opportunity providers.